TEMIC

TELEFUNKEN Semiconductors

TDA3505G

Video Processor with RGB Insertion

Technology: Bipolar

Features

- Capacitive coupling of color difference-, Y input signals with black level clamping in the output stages
- Linear saturation adjustment at the color difference input stage
- (G-Y)- and RGB matrix
- Linear processing of inserted RGB-signals
- Same black level for inserted as for matrixed signals
- Linear contrast and brightness adjustment acting on inserted and matrixed signals
- Peak white limiting
- Horizontal and vertical blanking and black level clamping by a super sandcastle-pulse
- White level adjustment by three electronic potentiometers
- Emitter follower output stages as well as drivers for RGB-power stages
- Three identical RGB channels

Case: 28-pin dual inline plastic

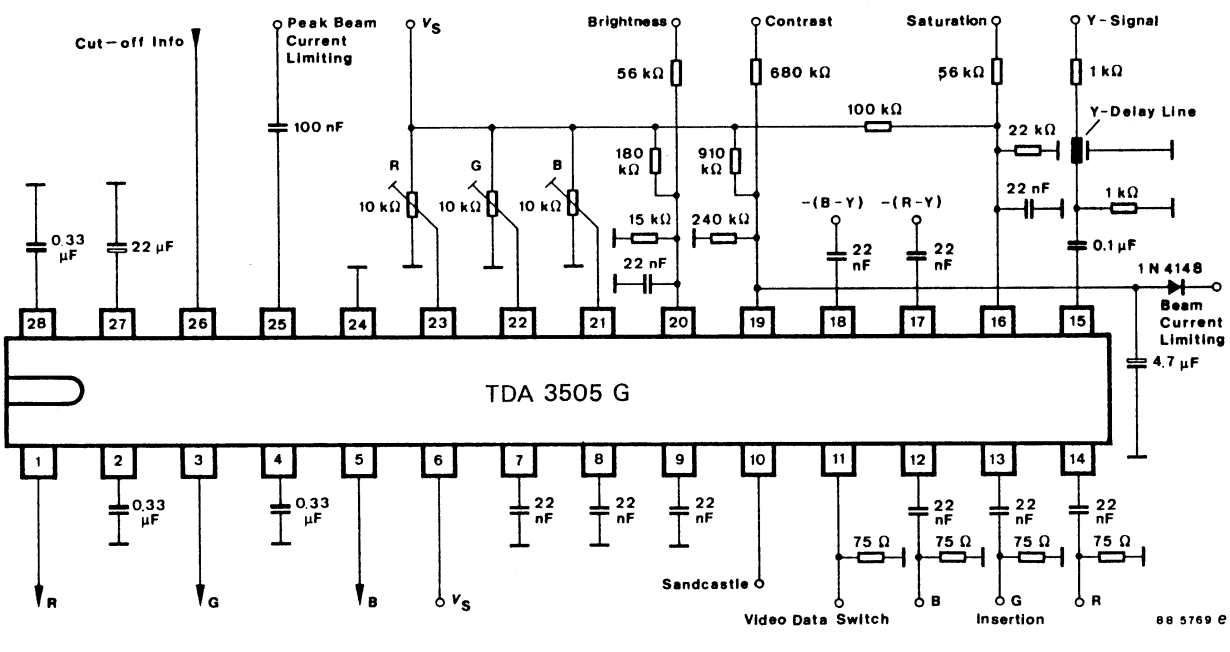


Figure 1 Application circuit

Absolute Maximum Ratings

Reference point Pin 24

Parameters		Symbol	Value	Unit
Supply voltage	Pin 6	V_S	13.2	V
External voltages No dc voltages allowed at Pins: 1 to 5, 7 to 9, 12 to 15, 17, 18, 27 and 28	Pins 10, 21, 22, 23, 25 and 26 Pins 16, 19 and 20 Pin 11	V_{ext}	0 to V_S 0 to 0.5 V_{SS} –0.5 to +3	V
Currents	Pins 1, 3 and 5 Pin 19 Pin 20 Pin 25	$-I_o$ I_I I_I $-I_I$	3 10 5 5	mA mA mA mA
Power dissipation	T_{amb} = 25°C	P_{tot}	1.7	W
Junction temperature		T_j	125	°C
Ambient temperature range		T_{amb}	0 to +70	°C
Storage temperature range		T_{stg}	–25 to +150	°C

Electrical Characteristics

V_S = 12 V, figure 1, reference point Pin 24, T_{amb} = 25°C, unless otherwise specified.

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	Pin 6	V_S	10.8		13.2	V
Supply current	Pin 6	I_S		85		mA
Color difference stages						
Input voltage	–(B-Y)-signal for 75% color Pin 18 –(R-Y)-signal for 75% color Pin 17	V_{ipp}		1.33 1.05		V
Input resistance	Pins 17 and 18	R_i	100			kΩ
Input current during scanning	Pins 17 and 18	I_i			1	μA
Internal bias clamping voltage	Pins 17 and 18	V_I		4.2		V
Saturation						
Control voltage range	Δ_{Sat} = –20 to +6 dB Pin 16	V_I		2.1 to 4.3		V
Control voltage for attenuation	$d_{Sat} \geq$ 40 dB d_{satnom} = 0 dB	V_I		 3.1	1.8	V
Input current		I_I			20	μA

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
Luminance amplifier	Pin 15					
Comp. video signal amplitude		V_I		0.45		V
Input resistance		R_i	100			kΩ
Input current during scanning		I_I			1	µA
Internal bias voltage		V_I		2.7		V
RGB-Channels, signal switch pin 11						
Signal insertion	"ON" "OFF"	V_I	0.9		3 0.4	V
Input current		I_I	–100 to + 200			µA
RGB insertion inputs	Pins 12, 13 and 14					
Black-white input signal	 $V_{11} \leq 0.4$ V [1)] $V_{11} \geq 0.9$ V [1)]	V_{Ipp} V_I V_I		1 4.3 4.4		V
Input currents during scanning		I_i			1	µA
Contrast	Pin 19					
Control voltage range	Δ_{Contr} = –18 to +3 dB	V_I		2 to 4.3		V
Control voltage	$d_{Contr\ nom}$ = 0 dB $d_{Contr\ nom}$ = –6 dB	V_I		3.6 2.8		V
Input current	$V_{25} \geq 6$ V	I_I			2	µA
Peak beam current limiting						
Internal bias voltage	Pin 25	V_I		5.5		V
Input resistance	Pin 25	R_i		10		kΩ
Contrast control input current	V_{25} = 5.1 V Pin 19	I_I		17		mA
Brightness	Pin 20					
Control voltage range		V_I	1		3	V
Input current		I_I			10	µA
Control voltage for nom. black level		V_I			2	V
Black level change in the control range w.r.t. the nom. black-white signal				±50		%
Internal signal limiting w.r.t. the nom. black-white signal and nom. black level	"black" direction "white" direction			–25 120		%
White adjustment	Pins 21, 22 and 23					
AC amplification [2)]	$V_{21,22,23}$ = 5.5 V = 0 V = 12 V	G_v		100 60 140		%
Input resistance		R_i		20		kΩ

Parameters	Test Conditions / Pins	Symbol	Min.	Typ.	Max.	Unit
RGB emitter follower outputs Pins 1, 3 and 5						
Nom.: Contr, Sat, white adjustment Output signals	Black-white	V_{0pp}		2		V
Black level without cut off control	$V_{2,4,28}$ = 10 V	V_0		6.7		V
Current of the internal current sources		I		3		mA
Cut off control range		ΔV_0		4.6		V
Cut off control Pin 26						
Input voltage range		V_I	0		6.5	V
Voltage difference between cut off and leakage current levels [3]		ΔV_I		0.5		V
Input voltage clamping during flyback		V_I		0		V
Amplifications, nom.: Contr, Sat, white adjustment, reference point Pin 15						
Voltage amplification	Pins 1, 3 and 5	G_v		16		dB
Frequency response	B = 0 to 5 MHz	d			3	dB
(R-Y)-signal, reference point Pin 17						
Voltage amplification	Output R Pin 1	G_v		6		dB
Frequency response	B = 0 to 2 MHz Pin 1	d			3	dB
(B-Y)-signal, reference point Pin 18						
Voltage amplification	Output B Pin 5	G_v		6		dB
Frequency response	B = 0 to 2 MHz Pin 5	d			3	dB
RGB insertion signals, reference point Pins 12, 13 and 14						
Voltage amplification	Pins 1, 3 and 5	G_v		6		dB
Frequency response	B = 0 to 6 MHz Pins 1, 3 and 5	d			3	dB
Sandcastle detector with 3 thresholds for separation of sandcastle pulse, pin 10						
H- and V-pulses blanking to ultra black (–25 %) H-pulse		V_i V_i	2 4		3 5	V V
Clamping pulse	$t_p \geq 3.5\ \mu s$	V_I	7.5			V
No gating		V_I			1	V
Input current		$-I_I$			110	µA

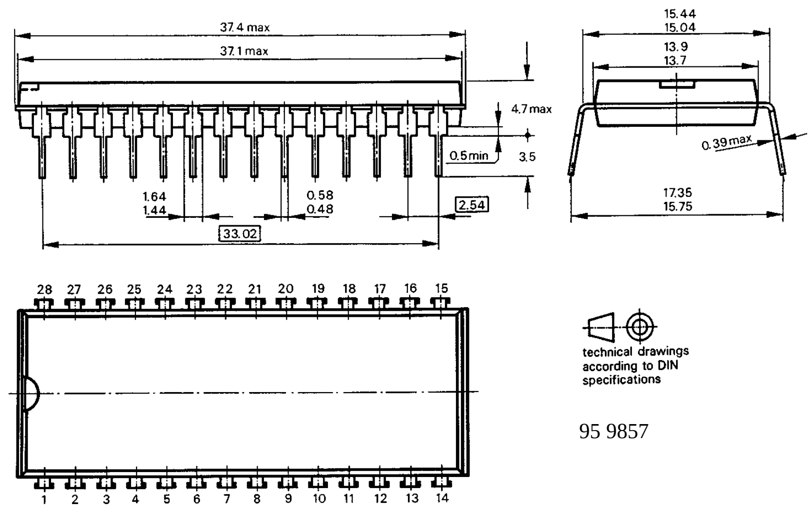
1) During clamping pulse time the inserted signals are clamped at the black level of the RGB signals matrixed by the color difference – and Y-stages ($V_{11} \leq 0.4$ V). At $V_{11} \geq 0.9$ V the inserted signals are clamped at an internal bias voltage.

2) If the inputs for white adjustment (Pins 21, 22 and 23) are not connected there is an internal bias voltage of 5.5 V.

3) Black level at the measured channel at nom. value where is in other two channels at ultra black level.
By leakage current measure: all three channels gated at ultra black level.

Dimensions in mm

Package: DIP 28



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